

CLAIMS

1. A lamination-type resistance element comprising:

a laminated sinter having a plurality of ceramic resistance layers and a plurality of internal electrodes laminated therein; and

a first external electrode and a second external electrode formed on the outer surface of the laminated sinter,

wherein the plurality of internal electrodes contains a plurality of internal electrodes of a first group and a plurality of internal electrodes of a second group,

wherein the plurality of internal electrodes of the first group each contain a resistance unit in which at least two internal electrodes are disposed so as to face each other through the ceramic resistance layer, one end of the resistance unit is electrically connected to the first external electrode, and the other end is electrically connected to the second external electrode, and

wherein the internal electrodes of the second group each contain a plurality of pairs of internal electrodes in which one end of one electrode faces one end of the other electrode with a gap therebetween on the same plane inside the laminated sinter, one internal electrode in each pair is electrically connected to the first external electrode, and the other is electrically connected to the second external electrode.

2. A lamination-type resistance element as claimed in claim 1, wherein the plurality of gaps of the second group is formed so as to lie on top of one another in the lamination direction in the laminated sinter.

3. A lamination-type resistance element as claimed in claim 1 or 2,

wherein the internal electrodes of the first group each contain a first divided internal electrode electrically connected to the first external electrode and a second divided internal electrode

electrically connected to the second external electrode and one end of the first divided internal electrode and one end of the second divided internal electrode face each other with a gap therebetween on the same plane, and

wherein, regarding the internal electrodes of each pair of the second internal electrode group, when the internal electrode electrically connected to the first external electrode forms a third internal electrode and the other internal electrode electrically connected to the second external electrode forms a fourth internal electrode, the gap which is the closest to the second group among the gaps of the first group is the gap which is the closest to the first group among the gaps between the third and fourth internal electrodes of the second group disposed so as to lie on top of one another in the lamination direction.

4. A lamination-type resistance element as claimed in claim 3, wherein a plurality of pairs of first and second divided internal electrodes are laminated and the gaps in neighboring pairs of electrodes in the lamination direction are formed at different locations when seen from one side in the lamination direction.

5. A lamination-type resistance element as claimed in claim 3, wherein, in the internal electrodes of the first group, a no-connection-type internal electrode disposed on top of the first and second divided internal electrodes through a ceramic resistance layer is further contained.

6. A lamination-type resistance element as claimed in claim 1 or 2, wherein the internal electrodes of the first group each contain a first internal electrode electrically connected to the first external electrode and a second internal electrode electrically connected to the second external electrode, and the first and second internal electrodes are disposed so as to lie on top of one another with a ceramic layer therebetween.

7. A lamination-type resistance element comprising:

a laminated sinter having a plurality of ceramic resistance layers and a plurality of internal electrodes laminated therein; and

a first external electrode and a second external electrode formed on the outer surface of the laminated sinter,

wherein the internal electrodes contain internal electrodes of a first group and internal electrodes of a second group,

wherein the internal electrodes of the first group each contain a first internal electrode and a second internal electrode in which one end of one electrode is formed so as to face one end of the other electrode with a gap therebetween on the same plane inside the laminated sinter and the other ends are connected to the first external electrode and the second external electrode, respectively, and neighboring gaps between the first and second internal electrodes in the lamination direction of the laminated sinter are formed at different locations when seen from the lamination direction of the laminated sinter, and

wherein the internal electrodes of the second group each contain a pair of a third internal electrode and a fourth internal electrode in which one end of the third internal electrode face one end of the fourth internal electrode other with a gap therebetween on the same plane inside the laminated sinter and the other ends are connected to the first external electrode and the second external electrode, respectively, and the gaps formed by the third internal electrodes and fourth internal electrodes are at the same location along the lamination direction of the laminate sinter.

8. A lamination-type resistance element comprising:

a laminated sinter having a plurality of ceramic resistance layers and a plurality of internal electrodes laminated therein; and

a first external electrode and a second external electrode formed on the outer surface of the laminated sinter,

wherein the internal electrodes contain internal electrodes of a first group and internal electrodes of a second group,

wherein the internal electrodes of the first group each contain a first internal electrode and a second internal electrode in which one end of the first internal electrode is formed so as to face one end of the second internal electrode with a gap therebetween on the same plane inside the laminated sinter and the other ends are connected to the first external electrode and the second external electrode, respectively, and a no-connection-type internal electrode which is formed so as to lie on top of the first internal electrode and the second internal electrode through the ceramic resistance layer in the lamination direction of the laminated sinter and which is not connected to the first and second external electrodes, and

wherein the internal electrodes of the second group each contain a third internal electrode and a fourth internal electrode in which one end of the third internal electrode faces one end of the fourth internal electrode with a gap therebetween on the same plane inside the laminated sinter and the other ends are connected to the first external electrode and the second external electrode, respectively, and the gaps formed by the third internal electrodes and fourth internal electrodes are at the same location along the lamination direction of the laminated sinter.

9. A lamination-type resistance element comprising:

a laminated sinter having a plurality of ceramic resistance layers and a plurality of internal electrodes laminated therein; and

a first external electrode and a second external electrode formed on the outer surface of the laminated sinter,

wherein the internal electrodes contain internal electrodes of a first group and internal electrodes of a second group,

wherein the internal electrodes of the first group each contain a first internal electrode connected to the first external electrode and

a second internal electrode connected to the second external electrode which face each other through the ceramic resistance layer, and

wherein the internal electrodes of the second group each contain a third internal electrode and a fourth internal electrode in which one end of third internal electrode faces one end of the fourth internal electrode with a gap therebetween on the same plane inside the laminated sinter and the other ends are connected to the first external electrode and the second external electrode, respectively, and the gaps formed by the third internal electrodes and fourth internal electrodes are at the same location along the lamination direction of the laminated sinter.